SECTION 281304

enterprise PHYSICAL ACCESS CONTROL SYSTEM (epacs)

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 3 Specification with primarily required text; therefore, most of the text cannot be edited, but there is editable text which is noted within the Section with a “Note to Specifier.” Do not revise the required paragraphs without an approved Deviation from USPS Headquarters, Facilities Program Management, through the USPS Project Manager.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

**Use this section where an Enterprise Physical Access Control System (ePACS) is part of the Work. Verify ePACS requirements with the USPS Project Manager and US Postal Inspection Service.**

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1. GENERAL
	1. SUMMARY

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**NOTES TO SPECIFIER**

Edit Paragraphs A, B, and C below as needed to coordinate with project scope of work.

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* + 1. Section includes specifications for an integrated security management system which shall perform the following general service:
			1. Access control.
			2. Alarm monitoring.
			3. Reporting functions.
			4. Security management functions.
			5. Photo-ID badge issuing.
		2. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents including:
			1. ePACS Standard System Configuration – revised March 2017.
			2. Access Control (ePACS) SOP – revised October 2019.
		3. Related Sections:
			1. Section 081100 – Metal Doors and Frames.
			2. Section 087100 – Door Hardware.
			3. Section 111415 – Turnstiles.
			4. Section 260500 – Common Work Results for Electrical.
			5. Section 264128 – Surge Protective Devices (SPD).
			6. Section 270500 – Common Work Results for Communications.
			7. Section 281524 – IP Video Intercom and Exterior Gate Control System.
			8. Section 281600 – Intrusion Detection System.
			9. Section 282305 – Integrated Security and Investigative Platform (ISIP) CCTV System.
			10. Section 283100 – Fire Emergency Voice/Alarm Communication System (EVACS).
	1. SYSTEM DESCRIPTION
		1. Enterprise Physical Access Control System:
			1. Access management system (System) shall monitor and control access to areas defined herein.
			2. The system will utilize proximity cards as its primary access device, but will support ISO 14443 Contactless smartcard technology, such as Mifare, and (keypad) technology at each door. It shall also support alarm inputs and control outputs.
			3. System shall consist of computers (servers/workstations), stand-alone microprocessor based controllers, card readers [and/or keypads] and host software.
			4. The microprocessor based controllers will be capable of controlling 16 card reader inputs and 16 door outputs. It will also be able to monitor a minimum of 92 alarm points, storing a minimum of 5000 events before downloading to the central computer. It will be able to store a minimum of 10,000 cardholders.
			5. System shall be capable of operating in a distributed processing environment with or without host connectivity.
			6. Specific types of devices and their functions shall be addressed in relevant sections.
			7. The system shall support an integrated electronic photo identification (photo-ID) system.
			8. System will utilize an ODBC compliant database, such that it can share or retrieve information from a local database.
			9. System shall be able to compare its list with the information from the USPS database and flag discrepancies of listed individuals in either database and have the ability to generate a report listing the discrepancies and records.
			10. System will share its database with the electronic photo-ID system to eliminate redundant input of data to the databases for common data fields.
			11. The operating system shall be USPS Windows applicable version (ACE standard operating system).
			12. The system shall support true multi-user, multi-tasking with a minimum of 3 workstations.
			13. The system shall include capability for remote access for off-site support and/or management workstations. Systems that connect to the network must provide remote access via the Postal Service business partner VPN connectivity. Dial-up phone connectivity is not permitted when systems are connected to the network.
			14. The system shall utilize standard GUI interface allowing day-to-day operations to be performed using a standard mouse. All graphics shall be dynamic color alarm graphic maps (user definable) created with graphic drawing programs, not vector files. All device names shall be user programmable (minimum of 32 characters, full English).
			15. The complete operator instruction manual shall be imbedded in the on-line help and shall be readily accessible using standard “Index,” “Help Topics,” “Keyword” and “Search” requests.
			16. The client shall have the ability to define events for viewing in any one of multiple event viewer screens or any combination of screens. Events shall also be designated for printing to selectable printers.
			17. Provide multiple levels of password protected system access with encryption. All passwords will use one-way encryption.
			18. Provide operator with configurable reporting of event history and cardholder activity by authorized request only.
			19. Provide reports for: Inputs (all or in groups), outputs (all or in groups), alarm messages, instructions, event action, card transaction history, field devices and panel reports, alarm history, alarm suppression.
			20. Report generation shall allow for reports to be filtered by time and date as well as by device name, event category and definition and by card holder categories or individual record(s).
		2. Description of work:
			1. Include all necessary labor, tools, equipment, and ancillary materials required to furnish and install a complete and operational access control and alarm monitoring system.

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**NOTE TO SPECIFIER**

Review the following lists with the USPS Project Manager and US Postal Inspection Service. Note that coded keypads shall only be utilized upon approved exception by USPS. Modify accordingly.

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* + - 1. Enterprise Physical Access Control System will manage access to the following [building] [and] [selected areas] using [encoded cards.] [and/or] [coded Keypads.]
				1. Employee entrances/exits.
				2. Access to administrative space.
				3. Registry Cage.
				4. Stamp Depository.
				5. Vehicular access (employee and USPS maneuvering area).
			2. The extent of Enterprise Physical Access Control System work is defined to include, but not by way of limitation:
				1. ePACS Controllers.
				2. Reader Interface Modules.
				3. Card reading sensors.
				4. Input monitoring modules.
				5. Output relay modules.
				6. Wiring, power supplies, switches, and ancillary equipment.
			3. Requirements are indicated elsewhere in these specifications for work including, but not limited to, raceways and electrical boxes and fittings required for installation of control equipment and wiring, not the work of this section.
			4. The power supplies and micro-switches controlling the egress electric locks at each of the turnstiles and the RE-4 personnel door located at the employee entry shall be de-energized upon activation of a fire alarm emergency or manual operation of the emergency evacuation pushbutton. Turnstiles shall immediately operate in the “free spin” mode (egress direction only). Inbound entry direction shall remain secure. Coordinate all requirements with Section 111415 – Turnstiles.
	1. REFERENCES
		1. NEC: All electrical wiring work shall comply with the latest edition of the NEC.
		2. NEMA**:** Electrical equipment shall comply with applicable portions of NEMA.
		3. FCC: All assemblies shall be in compliance with FCC emission standards.
			1. Proximity/Contactless Smartcard Card Reading Sensors: Part 15, Subpart F (field disturbance sensors).
			2. Dial-up modems: Part 68.
		4. UL-1012 and CSA: All power supplies shall be in compliance with Underwriters Laboratories standard 1012 and CSA standards for power supplies.
			1. UL-294: The system shall comply with Underwriters Laboratories standard 294 for Enterprise Physical Access Control Systems.
	2. SUBMITTALS
		1. Product Data: Submit for prior approval, Manufacturer’s data on Enterprise Physical Access Control System and components, including manufacturer’s model numbers, catalog data sheets, power requirements, dimensions, layouts, installation details, single line riser diagram.
		2. Shop Drawings: Submit dimensioned drawings of Enterprise Physical Access Control System and accessories including controllers, proximity card reading sensors, keypads, power supplies, switches, and ancillary equipment. Submit separate layout drawings of each terminal cabinet, equipment rack, control panel, interpanel and intrapanel wiring, power supplies, terminal strips, including labeling of all components, point-to-point wiring, and calculations for UPS power. Provide 1/8-inch scale floor plans showing locations of all devices.
			1. Submit dimensioned and scaled elevation drawings for each ePACS terminal cabinet showing the location of the reader interface modules, associated reader power supplies, terminal strips, surge protectors, receptacles and other ePACS components. Elevation drawings shall be submitted and approved prior to ordering the terminal cabinets.
		3. Security Riser Diagram: Shall detail the number and location of controllers, reader interface modules, power supplies, indicate all cabling and wiring, host equipment. Riser diagrams shall be submitted to the USPS Project Manager for review and concurrence prior to execution.
		4. Operator’s Manual: Submit for prior approval, Manufacturer’s manual for programming and operating the system and its related components.
		5. Submit evidence of training from the manufacturer of the system proposed for installation. Evidence shall include written certificates of training or similar documentation on manufacturer’s letterhead demonstrating the installer’s qualifications.
	3. QUALITY ASSURANCE
		1. Manufacturer: Manufacturer of products defined in this section must have:
			1. Industry experience: Company must have at least 5 years experience in manufacturing and servicing integrated access control and alarm monitoring systems.
		2. Contractor:
			1. Furnish all labor, services, including a Systems Integrator, and materials necessary to furnish and install a complete, functional enterprise physical access control system (ePACS). The System shall comply in all respects with the requirements of the specifications, manufacturer's recommendations, and Underwriters Laboratories Inc. (ULI) listings.
			2. Furnish certification that the entire system has been inspected and tested, is installed entirely in accordance with the applicable codes, standards, manufacturer's recommendations and ULI listings, and is in proper working order.
			3. The USPS requires professional workmanship from an experienced “systems” installer and will reject any faulty workmanship or installation methods not meeting their satisfaction.
		3. Systems Integrator:
			1. Company with a minimum of 5 years system design, engineering supervision, and installation experience in the alarm, building automation, or Access Control industry.
			2. The Integrator shall obtain a Sensitive Clearance from the USPS. This clearance will be coordinated by the USPS Project Manager. Use the following email for assistance in obtaining this clearance: pacs-support@usps.gov
				1. An interim clearance will be issued to allow the Integrator to request an ACE login from the USPS Project Manager.
				2. It will take a minimum of two weeks to obtain an interim clearance.
			3. Company that is trained and authorized to install manufacturer products. The ePACS wiring shall be installed by a Systems Integrator trained and authorized to install and wire the manufactured products.
			4. Company that has been successfully installing systems of equal size and complexity for a minimum of 5 years. Submit a minimum of 3 references. System references shall include projects where software and hardware installed is similar to the software and hardware proposed for this project.
			5. The Systems Integrator shall include all necessary labor, tools, equipment, and ancillary materials required to furnish and install a complete and operational access control and alarm monitoring system.
			6. The extent of Enterprise Physical Access Control System work is defined to include, but not be limited to:
				1. Installation of and testing of system including controllers, reader interface modules, proximity/contactless smartcard card readers, keypads, input modules and output modules, software and photo-ID badge issuing system equipment.
				2. Wiring, power supplies, switches, and ancillary equipment.
				3. Programming of system, including creation/translation of database with USPS input, and access levels.
				4. Operator Training for using and programming the system for up to 6 operators and 2 shift supervisors, provide in 2 sessions of 8 hours each. Provide 2 additional 8-hour training sessions 3 months after acceptance. Provide 2 sessions of 4 hours each for separate training for photo-ID badge production operators.
				5. Submitting procedures for installing system on USPS networks and performing cut-over and acceptance testing on the system. Coordinate procedures with USPS Information Technology to ensure no interference with USPS network or systems.
				6. Provide two 8-hour maintenance training sessions.
		4. System Checkout:
			1. Burn-in: 1,000 hours at normal operating conditions or equivalency.
			2. On-site testing: Manufacturer trained and authorized Systems Integrator shall functionally test each component in the system after installation to verify proper operation and confirm that the panel wiring and addressing conform to the wiring documentation.
			3. Service facility: Systems Integrator shall have service facilities within 4 hours travel time of the installation. Any increase in this time shall be approved by the USPS Project Manager.
	4. WARRANTY
		1. System Components: 12 months from date of acceptance.
			1. Systems Integrator shall provide 24 hour emergency service for all reported system operational failures during such 12-month warranty period. The system must be fully operational within 48 hours. Include all necessary maintenance for the entire integrated system for the 12-month warranty period. On-site service response shall be 4 hours of the initial request for service and shall be provided 24 hours a day,7 days a week inclusive of all holidays.
			2. Service requests shall be reported via phone call to a designated service toll free phone number provided by the Systems Integrator.
1. PRODUCTS
	1. USPS-SUPPLIED PRODUCTS
		1. The following items are Not In Contract but are supplied by the local USPS facility for incorporation into the Work by the Contractor. Contact USPS via email at pacs-support@usps.gov for assistance.
			1. Proximity access cards/badges.
			2. ACE standard server/workstations and software.
			3. Photo-ID badge printer.
			4. Digital badge camera, backdrop, consumables, and peripherals.

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**NOTE TO SPECIFIER**

Verify manufacturer information, Product numbers, and availability at time of Project Manual preparation for Project. Review and confirm system requirements with USPS Inspection Services. Modify following paragraphs accordingly. Vanderbilt Industries has been selected by the USPS as the sole source provider for the system controller. Revisions to or substitutions for the controller are not permitted. All other ePACS peripheral components can be provided by any of the manufacturers listed below.

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* 1. MANUFACTURERS
		1. Enterprise Physical Access Control System Controller:
			1. Contract transfer to Vanderbilt Industries (sole source provider for controller).
				1. Contact the following;

Patrick Shadood, USPS Account Manager, 2 Cranberry Road, Parsippany NJ 07054, office 973-316-3910; mobile 908-432-8806; fax 973-334-4850; PatrickShadood@vanderbiltindustries.com

The Contractor is required to inform the manufacturer that the controller is for a USPS project.

* + - 1. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Not Permitted.
		1. All other Enterprise Physical Access Control System peripheral components:
			1. Subject to compliance with project requirements, manufacturer offering Products which may be incorporated in the Work, including the following:
				1. Alarm Controls Corporation (800) 645-5538.
				2. Allegion/Schlage (877) 671-7011.
				3. Altronix Corporation (888) 258-7669.
				4. Bosch Security Systems, Inc. (800) 289-0096.
				5. Ditek Corporation (800) 753-2345.
				6. GE Security (800) 428-2733.
				7. George Risk Ind./GRI (800) 523-1227.
				8. HES Innovations (800) 626-7590.
				9. HID Corporation (800) 237-7769.
				10. Hirsch Electronics Corporation/Identiv, Santa Ana, CA (888) 809-8880.
				11. Honeywell Security (800)323-4576.
				12. Lenel Systems International (866) 788-5095.
				13. Potter Electric Signal Co. (866) 240-1870.
				14. Safety Technology International (STI) (800) 888-4784.
				15. Software House (800) 507-6268.
				16. Vanderbilt Industries: contact G. Patrick Shadood; Office - (973) 316-3910; Mobile – (908) 432-8806.
				17. XCeedID Corporation (877) 671-7011.
			2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
	1. MATERIALS AND COMPONENTS
		1. Enterprise Physical Access Control System Controller:
			1. The Enterprise Physical Access Control System shall include microprocessor based controllers by Vanderbilt Industries #VRCNX-A.
			2. The Contractor is required to inform the manufacturer that the controller is for a USPS project.
			3. The controller shall be ordered in a NEMA 1, metal enclosure for wall mounting and include integrated battery backup. The controller shall be equipped with keyed door latch.
		2. Controllers: provide complete hardware to operate with the following features:
			1. The controllers shall support a minimum of 16 card reading sensors and shall be capable of supporting additional input and output modules. Vanderbilt Industries #VRCNX-A.
			2. Database: Database shall store all user operating data and handle event reporting for all possible attached devices, and shall contain memory capacity for the following:
				1. Minimum of 10,000 card holder records.
			3. Event activity: System shall designate activity as an alarm or non-alarm condition, dependent upon modules installed, and shall report activity for:
				1. Supervised monitor points: 92 minimum.
				2. Outputs: 46 minimum.
			4. Relay outputs: System shall initiate relay output commands based on:
				1. Card Access Activity.
				2. Operator Keyboard Inputs.
				3. Pre-programmed Time Periods.
				4. Input activation.
			5. System diagnostics:
				1. Automatic system diagnostics and automatic alarming based on detected faults in the controllers, card readers, wiring, and expansion modules. At a minimum, diagnostics shall include faults, card reader errors, input change of state, expansion module faults, host communications, power monitoring and reader communications errors. If a problem is detected, it shall be reported to the host (when communications is restored).
				2. Each time the controller is powered, the panel shall go through an automatic diagnostic cycle. If a problem is detected, it shall be reported to the host. Diagnostics cycle shall include indications for fault, reader error, card swipe, monitor point change of state, host communication, card reader communication, program watchdog and power.
			6. Transaction buffer: 5,000 transactions, minimum.
			7. Flash memory for real time program updates from the host and/or locally connected computer.
			8. Communication: Primary communications shall support TCP/IP protocols for Ethernet using the USPS structured wiring system via an on-board Ethernet port. In addition, the controllers shall have an on-board RS-232 port for local connection and emergency dial-up communications.
			9. Tamper Switch: enclosure shall include a SPDT tamper switch wired at the factory.
			10. UL-294 rated.
			11. Power:
				1. The controllers shall operate on 12 - 24VDC, powered from an external, regulated power supply with battery backup. The controllers shall provide necessary power to all card readers and expansion modules.
				2. Memory Retention: The controllers shall maintain configuration and card holder information for up to 72 hours when operating power is disconnected from the controllers.
		3. Reader Interface Module (RIM):
			1. Each card reader sensor shall be interfaced with a dedicated, single reader interface module connected to the controller via RS-485 protocol, Vanderbilt “VRINX”. Interface module shall have the following features:
				1. The reader interface module shall support multiple reader technologies including, but not limited to:

Smart Card

Magnetic Stripe (swipe or insertion)

Wiegand (swipe or insertion)

Proximity

Biometric

Barcode

* + - * 1. Input/Output configurations:

Inputs: 4 supervised or non-supervised.

Outputs: 2 form “C” SP/DT 1A relays.

* + - * 1. RS-485 communication: Up to 4,000 feet.
				2. Power:

Voltage: 14 – 24 VDC predicted upon read head used.

Current: 120 mA @ 24 VDC (without read heads).

* + - * 1. Operating temperature: 32 degrees to 120 degrees F.
				2. Operating relative humidity: 10 – 90 percent non-condensing.
				3. The reader interface module shall be mounted within NEMA 1, metal enclosure with keyed door latch.
		1. Input/Output Expansion Board:
			1. Input/Output expansion boards shall be utilized to provide additional input and output responses in excess of the available input/output configurations at the reader interface modules. Expansion boards shall also be utilized to supervise multiple door contacts, exit alarms, etc. in lieu of using reader interface modules.
			2. Input/Output expansion board shall be connected to the controller via RS-485 protocol, Vanderbilt #VIONX-8.
			3. The input/output expansion board shall support universal triggers which integrate any input with any or all output responses and shall have the following features:
				1. 16Kb flush memory and 1Kb RAM
				2. Two serial ports (RS232 or RS485)
				3. 8 supervised or unsupervised contact inputs
				4. Contacts can be defined as alarms, door status, egress, or other environmental conditions
				5. 8 Form “C” SP/DT mechanically latching 1 A relay outputs
				6. NEMA 1, metal enclosure with hinged door and keyed door latch
				7. BAA compliant.
		2. Card Reading Sensor:
			1. General:
				1. Card Reader (CR) shall read proximity cards and send signal to Controller for processing. The CR shall be compatible with:

125 KHz proximity, such as HID Corp 1000, capable of direct image printing (PVC overlay for direct image printing is acceptable).

* + - * 1. Reader shall be listed in the FIPS 201 Evaluation Program Approved Product list <http://fips201ep.cio.gov/apl.php>
				2. CR shall comply with the Standards for Facility Accessibility by the Physically Handicapped (USPS Handbook RE-4).
				3. CR shall have the means to be electrically isolated to prevent short circuits from disrupting other communications in the data line network.
			1. Capacities:
				1. CR shall read digital proximity cards signals to a minimum distance of *2* inches and contactless smartcard to a minimum distance of 1.5 inches (5.08mm) and does not require contact with the sensor.
			2. Long Range Proximity Card Readers (LRCR) to be provided at:
				1. High-speed rollup doors.
				2. Automatic impact doors.
				3. Inbound Truck Maneuvering Area Gates (a LRCR on top due to mirror on high vehicles and a LRCR mounted low for cars).
				4. Employee parking area gates.
				5. These LRCR’s are exempt from the requirements of FIPS201.
				6. Note that long range card readers require individual power supplies and batteries that must be served with 120 volt power. The power supplies shall be mounted within NEMA 1, metal enclosure equipped with keyed door latch.
			3. Specifications: Material shall be Polycarbonate UL94, and shall be UV resistant, sealed, water and weather resistant, and tamperproof.
			4. Environmental:
				1. Humidity: 0 percent to 100 percent condensing.
				2. Temperature: -40 degrees to +158 degrees F.
			5. Regulatory: Controller shall be designed to meet the following regulatory requirements:
				1. UL294 Listing Standard for Safety.
				2. FCC EMI and EMC Class A.
				3. EN55022 EMI and EMC Class A.
			6. Mounting:
				1. CR shall have the capacity to be mounted and operated behind any non-metallic, non-conductive surface, including glass.
				2. CR shall have the capability to be mounted on any metal door frame.
				3. Long range proximity card readers (LRCR):

At high-speed rollup and automatic impact doors mount per manufacturer's recommendations for industrial powered trucks and protect CR from vehicle impacts.

At Vehicle Gates mount per Standard Details.

* + - 1. Power:
				1. Source: Via the Wiegand interface cable to the controllers.
				2. The sensor shall emit a low power (less than one microwatt) RF field in up to 6 inches from surface.
			2. Wiring: Multiple conductor overall shielded cable (6/C-#18 AWG minimum). Size cable gauge to meet distance requirements from the controllers.
			3. Feedback:
				1. Single tri-color LED (green/amber/red) shall provide capability for diagnostic feedback.
				2. Green LED indicates valid card and red LED indicates invalid card.
				3. An audio tone shall indicate successful digital proximity/contactless smartcard card read and access granted.
			4. Diagnostics: CR and data-line integrity shall be monitored continuously and shall alarm if failure is detected and indicate device and location of fault.
			5. Self-protection:
				1. Physical damage, including breaking open sensor housing, shall not allow access to any circuitry which would allow the system to be compromised.
				2. Transmission of any frequency (or set of frequencies) into the sensor at any power level shall not compromise the system.

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**NOTE TO SPECIFIER**

Note that coded keypads shall only be utilized upon approved exception by USPS.

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* + 1. Keypad:
			1. General:
				1. The Keypad shall operate in conjunction with CR for an increased level of user authentication.
				2. Where required, the keypad shall be integral to the CR and provided as a single card reader/keypad combination unit.
				3. The system shall have the means to utilize a numeric keypad for entry of a Personal Identification Number (PIN).
			2. Capacities:
				1. Keypad only reader shall provide a standard 10 digit numeric entry organized in the standard telephone pad layout.
				2. The user shall be able to enter a 4-digit Personal Identification Number (PIN).
		2. Power Supplies with battery backup: Provide separate power supplies for controllers, associated electric locks and reader interface modules not powered by controllers.
			1. General:
				1. Uninterruptible Power Supply shall provide continuous power to the controller, card reader, expansion modules, annunciator devices, and electric locks and operate from a 120VAC/60Hz source.
				2. Provide external rechargeable battery(s) to maintain all controller, card reader, expansion module, and electric lock operation for at least 4 hours in event of power failure.
				3. Power supplies and batteries shall be mounted within NEMA 1, metal enclosure equipped with keyed door latch.
			2. Capacities: The Power supply shall provide:
				1. 12 Volt DC output to the controller; or 24 volt DC output to the electric locks.
				2. Ampere output current at 12 VDC, 24 VDC – 6 amps continuous.
				3. Power failure output and battery charger output.
			3. Environmental:
				1. Humidity: 85 percent at 86 degrees F.
				2. Temperature: 32 degrees to +122 degrees F.
			4. Regulatory: UL 294 and CSA.
			5. Power: 120VAC/60Hz source.
			6. Wiring:
				1. The power supply shall be connected to the controller via wiring of at least 16 AWG.
				2. The power supply shall utilize phoenix type connectors to allow for ease of field wiring and unit replacement or as recommended by the manufacturer.
			7. Feedback: A single LED indicates power ON condition.
			8. Self-protection: The power supply shall provide the following signals to the Controller:
				1. Power fail.
				2. Battery recharge signal.
			9. The electric lock power supplies controlling the exit doors shall be equipped with a fire alarm interface for emergency lock release.

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**NOTE TO SPECIFIER**

Long range vehicle and driver identification readers with RFID recognition shall be utilized at existing truck entries where a long range card reader cannot be properly located for driver access. Note that long range vehicle and driver identification readers shall only be utilized upon USPS approval of formal deviation request. Specifier shall include the paragraph below for those applications.

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* + 1. Long Range Vehicle and Driver Identification Reader:
			1. Provide long range vehicle and driver I.D. reader based on semi-active RFID technology with the following key features:
				1. Simultaneous vehicle and driver identification.
				2. Read range up to 33 feet.
				3. Object speed up to 125 mph.
				4. Tag authentication based on AES encryption.
				5. Adjustable read range.
				6. Bi-directional communication using two RFID channels.
				7. Robust industrial design.
				8. USB, Wiegand, Magstripe, Barcode Communication interface.
			2. Provide Long Range Vehicle and Driver I.D. Reader complying with the following technical specifications:
				1. Dimensions: 13 x 10.8 x 5.5 inches.
				2. Weight: 8.82 lbs.
				3. Protection class: IP66.
				4. Material: Cover ABS, Housing Die-casting ADC12.
				5. Operating temperature: -22 to +140°F.
				6. Relative humidity: 10% ... 93% relative humidity, non-condensing.
				7. Power supply: 24 VDC, 0.7A; Output 24Vdc, 0.1A.
				8. Power consumption: <20 Watt (on DC).
				9. Read range: Up to 33 feet, message acceptance ratio > 80%.
				10. Object speed: Up to 124 mph at appropriate distance.
				11. Operating frequency: 2.438 – 2.457 GHz, 433.62 & 434.22 MHz (RX-Category 3) Ton <5sec.
				12. Antenna polarization: Circular (LHC) (2450 MHz) integrated antenna; Horizontal (433 MHz); dedicated antenna.
				13. Air interface:

2.45 GHz: Nedap proprietary encoding standard.

433 MHz: Encryption based upon diversified AES128; 300kbps/ GFSK 75 kHz.

Duty cycle < 1%; LBT not applicable.

* + - * 1. Communication interfaces:

USB, Wiegand, Magstripe (clock & data), Barcode (Code39).

* + - * 1. Connectors: PCB screw connectors.
				2. Tamper switch: Magnetic switch, normally closed.
				3. Standards: CE, FCC, IC, ACMA, R-NZ, China\_CMIIT, UL294.
				4. Included accessories: 9984364 Wall Mounting Set.
				5. Basis of Design: Nedap Transit Ultimate #9215689.
			1. The Long Range Vehicle and Driver Identification Reader shall be provided with the following accessories:
				1. Weather protection hood – Nedap #9218-327.
				2. Pole mounting kit – Nedap #5626595.
				3. Security key pack – Nedap #9216537.

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**NOTE TO SPECIFIER**

Booster tags are required for mounting within each USPS vehicle requiring entry through the truck gate. Specifier shall include the appropriate quantity required for the specific application in paragraph below.

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* + - 1. Long Range Vehicle and Driver Identification Booster Tags shall be provided for communication with the long range RFID reader and easy mounting to the vehicle’s windshield. When an authorized photo identification access card is inserted into the booster, it is read, and then boosted to the vehicle and driver identification reader; access is granted and the gate opens automatically.
				1. Basis of Design: Nedap Smartcard Booster Ultimate #9982809.
				2. Quantity required: [50] Boosters Tags.
		1. Electric Door Strike
			1. The electric strike shall transmit data to the interface module indicating the bolt is not engaged and the strike mechanism is unlocked. Power line supervision shall incorporate an end-of-line resistor.
				1. Electric strike shall be concealed for use with cylinder locksets.
				2. Electric strike shall be tamper resistant and rated 12 or 24 VDC with internally mounted solenoid.
				3. Electric strike shall accommodate 1/2 inch to 5/8 inch cylindrical latch bolt (5/8 inch with 1/8 inch door gap).
				4. Field selectable “Fail Secure/Fail Safe” (set to “Fail Safe”).
				5. Basis of Design: Assa Abloy #HES8000C (complete with faceplate).
		2. Magnetic Lock
			1. Provide bracket mounted, magnetic lock with 1200 pounds of holding force suitable for single door leaf installations. Double leaf doors shall be equipped with (2) single magnetic lock assemblies in separate enclosures. The magnetic lock shall have the following features:
				1. U.L. 294, U.L. 10C and U.L. 864 Listed.
				2. Current Draw: 505 mA.@12 VDC.
				3. Magnet Size: 10-1/2 L x 2-7/8 H x 1-1/2 W.
				4. Armature Size: 7-1/4 L x 2-3/8 H x 5/8 W inches.
				5. Clear anodized finish.
				6. Lifetime Warranty.
				7. Magnetic lock to include all necessary mounting plates and brackets.
				8. Built-in ARC suppression.
				9. Instant Release: No hysteresis.
				10. Basis of Design: Alarm Controls #1200S.
		3. Door Contact Switch
			1. Furnish and install door contacts at each door location indicated on the drawings. Door contact switches shall be concealed type, recessed in the jamb, opposite the hinged location.
				1. Install per manufacturer’s written recommendations and maintain the minimum gap separation.
				2. Door contacts shall be compatible with steel doors and jambs.
				3. Door contacts for new doors shall be concealed type only. Surface mounted door switches shall only be installed on existing doors and frames.
				4. Basis of Design:

Interlogix Magnetic Contacts, #1085TWN with 1K ohm resistor (surface mount).

Interlogix Roller Plunger, #3005-N with 1K ohm resistor (recessed - wood doors).

Interlogix Roller Plunger, #1076CW-N with 1K ohm resistor (recessed-steel doors).

Interlogix Overhead Door Magnet Contacts, #2315A-L with IK ohm resistor (track mounted, overhead door contact - closed loop).

* + 1. Emergency Evacuation Pushbutton
			1. Manual activation of the emergency evacuation pushbutton shall de-energize the power supplies and micro-switches serving the egress electric locks at the turnstiles and RE-4 personnel door. The turnstiles shall immediately operate in the “free spin” mode (egress direction only). Inbound entry direction shall remain secure. Normal exit operation of the turnstiles and RE-4 access gate will be disabled until the manual reset of the pushbutton. Minimum reset time shall be set at 30 seconds, per NFPA 101.
			2. The pushbutton shall have indoor, “blue” polycarbonate housing with protective cover and the following features:
				1. Push to activate; turn to reset operation.
				2. “Red” LED indicator light.
				3. Raised label to read “Emergency Evacuation Pushbutton”.
				4. 2 form “C” maintained contacts, rated 10 Amps at 125/250 VAC.
				5. UL/cUL Listed; ADA compliant.
				6. Indoor flush or surface mount.
				7. Basis of Design: Safety Technology International, Stopper Station Series SS2429ZA-EN. Substitutions: Permitted.
		2. Exit Door Alarm
			1. All controlled exit doors requiring emergency egress shall be equipped with an audible and visual alarm station. The horn/strobe exit alarm shall be equipped with a remote key operated “reset” station and shall be 12 VDC powered from the lock power supply and batteries located at the controller.
			2. The exit door alarm shall have white polycarbonate housing and blue lens with the following features:
				1. U.L. Listed; CE approved.
				2. Sound output: 101 dBA at 10 ft. (minimum)
				3. Single tone: Piezo Siren-Warble.
				4. Current draw: 748 mA at 12 VDC.
				5. Rating: 12 VDC regulated.
				6. Indoor flush or surface mount.
				7. Flash rate: Same as siren sounding.
				8. Basis of Design: AMSECO #SSX-52SB. Substitutions: Permitted.
				9. Alternate Manufacture: ADI/WBox #OE-SRNSTROBT.
				10. Substitutions: Permitted.
			3. Key operated “reset” stations for all door alarms shall be keyed alike and shall be wall mounted top at 60 inches AFF, adjacent to the door.
1. Basis of Design: Alarm Controls #KA105A.
	* + 1. Due to the capacity of the lock power supply, alarm and visual indications shall operate continuously for no more than 45 seconds. The visual/audible alarm shall be field adjusted to operate 30 seconds, if not reset.
		1. Door Release Pushbutton
			1. Doors equipped with electromagnetic locks requiring free egress shall be released by a pneumatic time delay pushbutton.
			2. Pushbutton shall contain 1-1/2 inch diameter, mushroom head and pneumatic time delay with the following features:
				1. U.L. listed components.
				2. Green mushroom pushbutton with single gang, stainless steel plate.
				3. Contacts rated 10A at 35 VDC.
				4. Time range settable 2 seconds to 60 seconds.
				5. One Normally open and one normally closed contact.
				6. Switch time repeatable +10 percent.
				7. Labeled “Push to Exit”.
				8. Basis of Design: Alarm Controls #TS-14.
2. EXECUTION
	1. INSTALLATION METHODS
		1. Drawings are schematic and diagrammatic. Use judgment and care to install Work to function properly and fit within building construction and finishes. Power and low voltage conductors, conduit, components, not shown or specified, which are required to produce a complete and operative system are required to be furnished and installed. Refer to Section 260500 - Common Work Results for Electrical.
		2. Exact location of components is determined from dimensions on the Drawings, manufacturer's shop drawings, or as may be determined at Project Site. Do not scale Drawings for exact location of any item. Verify item mounting heights as required by project conditions, prior to rough-in.
		3. Route conduits and wiring associated with equipment and systems above ceilings, in chases, and concealed within building structure.
		4. All interior conduits shall be EMT with steel set-screw type couplings. All exposed exterior conduits (and interior conduits mounted below 10 feet – 0 inches AFF within the workroom) shall be heavy wall, rigid galvanized steel type.
		5. All concealed and exposed conduit and cabling shall be routed parallel and perpendicular to structural elements.
		6. All cables and conduits shall be routed below the roof decking to avoid damage due to future reroofing. Raceways and cables shall not be routed between the decking flutes.
		7. Surface mounted raceways or conduit permitted only at locations indicated on Drawings.
		8. Proposed equipment or devices, shown mounted on and/or adjacent to equipment, which if installed, would impair proper operation of existing or new equipment, shall be removed and relocated by Contractor as required so equipment will function properly. Notify USPS Project Manager immediately if any such condition exists.
		9. Seal and make permanently watertight penetrations by raceways or equipment through ceilings, walls or floors.
			1. Seal penetrations in non-fire rated ceilings, walls or floors material specified in Section 079200 – Joint Sealants.
			2. Seal penetrations in fire rated walls with material specified in Section 078400 - Firestopping.
		10. Install equipment and materials to provide required working clearance for servicing, repair and maintenance. Coordinate final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow required space for removal of parts that require replacement or servicing.
		11. Install materials and equipment level and plumb, parallel, and perpendicular to other building systems and components.
		12. Coordinate all cutting, patching and site work with the [Design Build Entity] [or] [General Contractor].
		13. Touch-up scratched and marred surfaces to match original finishes; remove all dirt and construction debris.
		14. All work areas shall be left in a broom swept condition at the end of each day.
	2. INSTALLATION - HANGERS AND SUPPORTS
		1. Install products in accordance with manufacturer's published instructions. Install all electrical equipment in accordance with Section 260500 - Common Work Results for Electrical.
		2. Furnish and install anchors, fasteners, and supports in accordance with NECA SI.
		3. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
		4. Do not use spring steel clips and clamps.
		5. Do not use powder-actuated anchors.
		6. Obtain permission from structural engineer before drilling or cutting structural members.
		7. Fabricate supports from structural steel angle or structural steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
		8. Install surface-mounted cabinets with minimum of four anchors.
		9. In wet and damp locations use structural steel channel supports to stand cabinets one inch off wall.
		10. Use sheet metal channel to bridge studs above and below cabinets recessed in hollow partitions.
	3. INSTALLATION – TERMINAL CABINETS
		1. Terminal cabinets shall be provided to house long range reader power supplies, interface modules, SPDs and other access control system components. Enclosures shall be hinged and lockable with panelboard construction and plywood backboards.
		2. ePACS terminal cabinets shall not contain CCTV components. The ePACS shall utilize independent wiring, raceways, and cabinets.
		3. Terminal cabinets shall be wall or pedestal mounted with bottom of cabinet at no less than 12 inches A.F.F. or A.F.G. Provide NEMA Type 1 enclosures within interior locations and NEMA Type 4 stainless steel or non-metallic polycarbonate type for exterior locations. Pedestal mounted cabinets shall be supported utilizing 4 inch square concrete posts buried 24 inches below finished grade and set in concrete footing with 6 inches of concrete all around.
		4. Terminal cabinets shall be amply sized to accommodate all components without overheating and forced air exhaust fans shall be provided. Cabinets shall be equipped with copper ground busses and those requiring 120 Volt power shall be provided with appropriate number of 20 Amp, 125 Volt receptacles complete with surge protection. Receptacles shall be securely mounted within the cabinet.
			1. Components shall be individually mounted and secured to the backboard. Stacking of components is not acceptable and the use of tie-wraps is prohibited.
			2. Long range, card reader power supplies shall be fed from 120 Volt circuits segregated to serve only the power supplies. Circuits utilized to feed gate controllers, CCTV components or any other non-related loads shall not be utilized to serve the ePACS or intercom equipment.
			3. Multi-output, fused power supplies may be utilized within the terminal cabinets to serve multiple long range car readers, provided each output is fuse protected.
		5. Exterior terminal cabinets mounted near or adjacent to vehicular traffic shall be protected using 6 inch dia. x 4 feet high concrete bollards. Exterior terminal cabinets shall be located within the secured area of the facility.
		6. Exterior terminal cabinets shall be equipped with a copper ground bus bonded to a driven ground rod using #2/AWG copper grounding electrode conductor.
	4. EQUIPMENT INSTALLATION AND DOCUMENTATION
		1. Installation:
			1. The Enterprise Physical Access Control System shall be installed and wired completely on the USPS structured wiring system as shown on the plans by factory trained and authorized employees of the Systems Integrator.
			2. Systems Integrator shall make all necessary wiring connections to external devices and equipment. Systems integrator shall program anti-pass back modes into the system in accordance with USPS requirements. Use the following e-mail for assistance in obtaining information regarding current USPS requirements: pacs-support@usps.gov.
			3. Systems Integrator employees shall carry proof of manufacturer’s certification at all times.
			4. Install systems to conform with the approved submittal data. Where coordination requirements conflict with the system requirements, refer conflicts to the USPS Project Manager.
			5. All Enterprise Physical Access Control System devices shall be securely mounted to the building structure and fastened with tamper resistant screws. Provide USPS with three sets of tamper screw removal tools to be stored locally for service and maintenance.
			6. All wiring connections shall enter enclosures at one location and be neatly dressed.
			7. Device Mounting:
				1. The controllers shall be wall mounted in a secure area.
				2. The power supplies shall be installed in a secure area adjacent to the controllers.
			8. All DC operated locking hardware, relays, and all other inductive loads shall have a diode connected to them to prevent noise and/or any induced currents. All AC operated relays or electric strikes shall have a MOV connected to them to suppress any current induced noise. Diodes and MOVs shall be connected at the strike or relay and shall be of the type recommended by the device manufacturer.
			9. Install PIR request-to-exit sensors such that "corridor pedestrian traffic" will not activate the sensor. Ceiling or wall mount shall be acceptable. Adjust the pattern and sensitivity such that detection is ensured for all egress attempts and such that detection cannot be achieved from the exterior side of the door.
		2. Network Communications:
			1. Installer shall coordinate all network communications wiring requirements with the structured cabling system provider to insure transmission pathway through the structured wiring system.
			2. Telecommunications outlets and cabling for equipment as shown on the plans are specified under Section 270500 - Common Work Results for Communications.
			3. Refer to “ePACS Standard System Configuration” and “Access Control (ePACS) SOP” for database configuration and local facility responsibilities.
		3. Documentation:
			1. Accurate “as built” drawings shall be furnished before final acceptance is requested, by the Systems Integrator to aid the USPS in programming. These shall indicate the door(s) controlled by each lock output, the monitoring points for the door controlled area, host server, workstation and badge issuing station location, all controllers locations, all electrical circuit and telecommunications outlet designations and any annunciator outputs or special inputs into the system in hard copy and electronic format (AutoCAD-coordinate version requirements with the USPS Project Manager).
			2. The Systems Integrator shall supply 6 copies of operating and maintenance manuals to aid the USPS in the programming of the system.
		4. Special Requirements for Cable Routing and Installation:
			1. The majority of the ePACS wiring in this building will be installed above ceilings without conduit. All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC) article 725. All cabling shall bare CMP and/or appropriate markings for the environment in which they are installed.
			2. Seal openings, existing or created, for cable pass through between floors, through rated fire and smoke walls. Creation of such openings as are necessary for cable passage between locations as shown on the drawings shall be the responsibility of the Contractor's work. Any openings created and left unused shall also be sealed as part of this work.
			3. Cabling routed underground, on the exterior, through inaccessible ceilings or less than 10 feet A.F.F. in the workroom shall be contained in conduit. Provide flush boxes within finished areas and factory boxes in unfinished areas. Provide 3/4 inch conduit risers with 90 degree bend and bushing for all wall mounted devices.
			4. The entire ePACS system shall utilize an independent wiring system not shared with any other building system. The structured cabling system racks, the TE’s, the fiber backbone, cable trays, etc. cannot be utilized for any ePACS purpose. Cable trays installed for the ePACS cabling may be utilized to contain the CCTV wiring.
		5. Surge Suppression:
			1. Provide individual surge protective devices (power and low voltage) at both ends of all exterior copper ePACS wiring and associated wiring exiting the building. Surge suppression shall be provided for the power and control wiring associated with the barrier arm and sliding gates, exterior card readers, exterior reader interface modules, power supplies, door contacts and magnetic locks. Refer to Section 264128 - Surge Protective Devices (SPD).
			2. Provide high-definition photographs showing the installation of the required surge protection devices at both ends of all exterior power and low voltage conductors. Photographs shall be transmitted to the A/E and USPS Project Manager.
		6. Gate and Door Release:
			1. The gate and door release functions required for vehicle and employee entry shall not be controlled or wired as part of the ePACS. Independent wiring from the video intercom CEU is to be provided. The video intercom system shall perform all the gate and door release functions. Loss or interruption of the ePACS shall not affect the operation of the gate or door release functions.
	5. SERVICE AND SUPPORT
		1. Startup:
			1. The Systems Integrator shall coordinate all system database requirements with the USPS and build the system database for the host server and workstations. At a minimum the Systems Integrator shall:
				1. Provide worksheets to the USPS with requested database information a minimum of 4 weeks prior to anticipated system startup.
				2. Load all system device names and system addresses.
				3. Load basic access levels.
				4. Load and test all applications and interfaces.
				5. Load and test sample proximity cards compatible with USPS Standard Card.
			2. After the system has been installed, the documentation delivered to the USPS and network communications is established in compliance with Sections 3.1 & 3.2, A above, the Systems Integrator shall verify correct operation of all system components and demonstrate and test the system for the USPS.
			3. Final system acceptance testing shall be conducted by the USPS Project Manager or, at the option of USPS, their authorized representative. Acceptance testing shall demonstrate all aspects of the Enterprise Physical Access Control System as described in the contract documents. The Systems Integrator shall make provisions for testing (any simulations required for testing) and provide a final acceptance test plan a minimum of one week prior to the anticipated testing date.
			4. Final acceptance testing shall be conducted on the completed system as described in this specification and configured to the satisfaction of the USPS Project Manager.
			5. The Systems Integrator shall guarantee all material and workmanship involving the system for 12 months after startup.
		2. Training:
			1. After system startup, the Systems Integrator shall instruct USPS personnel in how to program the system and demonstrate a typical operating program for each type of access controlled area.
			2. Enterprise Physical Access Control System training sessions shall be arranged with the USPS at least one week prior to the training date. Training manuals shall be delivered for each trainee with one additional copy delivered for archiving on the project site.
			3. Training manuals shall consist of an agenda, defined objectives for each lesson, a detailed description of the subject matter of each lesson, and the manufacturer’s written operation and system manuals. At a minimum, training agenda shall consist of the following.
				1. An overview of the system components and features.
				2. A detailed description of how the equipment will operate to meet the performance requirements of the Enterprise Physical Access Control System.
				3. A description of the operating system and application software.
				4. Start up and orderly shutdown procedures for the system.
				5. Hands on training on all Enterprise Physical Access Control System software and hardware features.
				6. Basic troubleshooting guide intended to identify the source of system problems.
				7. System configuration and data back-up and restoration procedures.
		3. Warranty Support:
			1. The Authorized Systems Integrator shall be available during the warranty period to answer programming and application questions to support USPS personnel during this period.
			2. The Authorized Systems Integrator shall have the training and capability to provide additional support services including:
				1. Regular testing and inspection of all system components and to submit reports on the results.
				2. Emergency Service for repairs and adjustments to the system and part replacement if necessary.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022